CLAIMS

What is claimed is:

1. A flowable materials container comprising:

a body of a cyclic olefin containing polymer or a bridged polycyclic olefin containing polymer, the body defining a chamber to contain flowable materials, the chamber having an opening;

an elastomeric component attached to the body and providing a seal of the chamber; and

wherein the body when filled with 1 ml of water suitable for injection and sealed with the elastomeric component and stored for 3 months generates less than 4 ppm of chlorides in the water.

2. The container of claim 1 wherein the body is a syringe body.

3. The container of claim 2 wherein the elastomeric component is a plunger seal.

4. The container of claim 1 wherein the elastomeric component is a synthetic rubber.

5. The container of claim 4 wherein the synthetic rubber is selected from the group consisting of styrene-butadiene copolymers, acrylonitrile-butadiene copolymers, neoprenes, butyl rubbers, polysulfide elastomers, urethane rubbers, stereo rubbers, ethylene-propylene elastomers.

6. The container of claim 5 wherein the synthetic rubber has halogen substitutents.

7. The container of claim 6 wherein the synthetic rubber is a halogenated butyl rubber.

8. The container of claim 7 wherein the synthetic rubber is a chlorobutyl-based elastomer.

9. A flowable materials container comprising:

a body of a homopolymer, copolymer or terpolymer of norbornene, the body defining a chamber to contain flowable materials, the chamber having an opening; and

an elastomeric component providing a seal of the opening and the component being a butyl rubber.

10. The container of claim 9 wherein the body is a homopolymer of norbornene.

11. The container of claim 9 wherein the body is a copolymer of norbornene.

12. The container of claim 11 wherein the copolymer of norbornene has a comonomer selected from the group consisting of α-olefins having from 2-10 carbons, aromatic hydrocarbons, cyclic olefins and bridged polycyclic olefins.

13. The container of claim 12 wherein the comonomer is ethylene.

14. The container of claim 9 wherein the butyl rubber is halogenated.

15. The container of claim 14 wherein the component is a chlorobutyl elastomer.

16. The container of claim 15 wherein the component is essentially latex free.

17. The container of claim 15 wherein the component is 100% latex free.

18. A syringe comprising:

a syringe body of a norbornene and ethylene copolymer, the body defining a chamber for containing water and having an opening; and

a plunger seal of a halobutyl based elastomer sealing the opening.

19. The syringe of claim 18 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 70°C to about 200°C.

20. The syringe of claim 18 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 75°C to about 150°.

21. The syringe of claim 18 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 76°C to about 149°C.

22. A syringe comprising:

a syringe body of a norbornene and ethylene copolymer, the body defining a chamber for containing water and having an opening;

a plunger seal of a halobutyl based elastomer sealing the opening; and

wherein the syringe meets all requirements of the United States Pharmocopoeia for sterile water for injection.

23. A sterile water for injection syringe comprising:

a syringe body of a norbornene and ethylene copolymer, the body defining a chamber containing water and having an opening;

a plunger seal of a halobutyl based elastomer forming a fluid tight seal of the opening; and

wherein the syringe meets all requirements of the United States Pharmocopoeia for sterile water for injection.

24. The syringe of claim 23 wherein the plunger seal is a chlorobutyl based elastomer.

25. The syringe of claim 24 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 70°C to about 200°C.

26. The syringe of claim 24 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 75°C to about 150°.

27. The syringe of claim 24 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 76°C to about 149°C.

28. The syringe of claim 24 wherein the norbonrene and ethylene copolymer is capable of being sterilized in an autoclave at 121°C.

29. A method for filling a syringe comprising the steps of:

providing a syringe body of a norbornene and ethylene copolymer and having an opening;

sterilizing the syringe body to define a sterilized syringe body;

transferring the sterilized syringe body to a sterile environment while maintaining the sterility of the sterilized syringe body;

filling the sterilized syringe body with an appropriate quantity of sterile water for injection;

sealing the opening with an elastomeric component of a halobutyl based elastomer to define a sterile water for injection syringe; and

wherein the sterile water for injection syringe meets the requirements of the United States Pharmocopoeia for sterile water for injection.

30. The method of claim 29 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 70°C to about 200°C.

31. The method of claim 29 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 75°C to about 150°.

32. The method of claim 29 wherein the norbornene and ethylene copolymer has a heat deflection temperature at 0.45 Mpa from about 76°C to about 149°C.

33. The method of claim 32 wherein the halobutyl based elastomer is a chlorobutyl-based elastomer.

34. The method of claim 29 wherein the transferring step comprises the step of:

transferring the sterilized syringe body from a sterilizing station to the sterile environment wherein the sterilized syringe body is exposed to a sterile ambient atmosphere.

35. A method for filling a syringe comprising the steps of:

providing a syringe body of a norbornene and ethylene copolymer and having an opening;

sterilizing the syringe body to define a sterilized syringe body;

transferring the sterilized syringe body to a sterile environment while maintaining the sterility of the sterilized syringe body;

immediately filling the sterilized syringe body with an appropriate quantity of sterile water for injection;

sealing the opening with an elastomeric component of a halobutyl-based elastomer to define a sterile water for injection syringe; and

wherein the sterile water for injection syringe meets the requirements of the United States Pharmocopoeia for sterile water for injection.